Adaptation of Serbian University to Bologna Process

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＜Abstract＞

The Serbian government decided to modify the university educational system to adopt the "Bologna process," and the council approved the Law on Higher Education (LHE) in 2002. The "Bologna Process" refers to the creation of the European Higher Education Area (EHEA) and is based on cooperation between ministries, higher education institutions, students and staff from 46 countries, plus the participation of international organizations. In this paper, we would like to introduce how Serbia has adapted its university educational system to the Bologna process.

The chapter begins with an historical introduction to the Serbian University which originated in 1808. After briefly explaining the Bologna process, the new education system is described. In order to adapt the Bologna process, some organizations were established; the Conference of Universities of Serbia and the Conference of Headmasters of Colleges, the National Council for Higher Education, and the Accreditation and Quality Assurance Commission. Their roles and the relationships are detailed. Finally, the curriculum of Faculty of Mechanical Engineering at Belgrade University is introduced as a case study.

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1. Introduction

Through development of Higher Education in Serbia, from the first step in the history of Higher Education, the main goal was to produce experts adequate to the needs of industry and society. The universities had to fulfill their mission as a coherent provider of higher education services in response to the needs of its country and citizens. Almost the same goal was to every country in the World. So, more or less, every country had developed own system of Higher Education, frequently not compatible between different countries. Mobility of experts from country to country was very difficult, because of different kind of educational systems. Nowadays is the same problem. Following European idea that students and experts today should have mobility and possibility to change education environment, Serbia has joined the European program of changing educational system: Bologna process — forming common European educational system. Today, there is rapid and successful reform of Higher Education in Serbia in line with the objectives of the Bologna process.

This paper stars from the historical view of Serbian universities. When the universities meet the Bologna process, it will be discussed how they have to change. For this purpose, the case study in Belgrade University is shown.

This paper is organized as follows. In section 2, the historical introduction of Serbian Universities is described. In section 3, the modern education of Serbian Universities is described. In section 4, Bologna process is explained shortly. In section 5, the reforming of the Serbian education system is explained for adapting to the Bologna process. After the request by the Serbian Minister for Education and Sport for the Serbian Higher Education system is introduced, Faculty of Mechanical Engineering at Belgrade University is shown as the case study. In section 6, we will summarize our talk.

2. Origin of Higher Education in Serbia

The history of Belgrade University could be traced from the beginning

of XIX century when Dositej Obradovic founded “The Big School” in Belgrade in 1808[1]. In 1838, “Lyceum” was founded in Kragujevac. In 1841, “Lyceum” was moved from Kragujevac to Belgrade and, in addition to Department of Philosophy, Department of Law was established. “School of Engineering” was established in old Belgrade University in 1846, which means the start of the education for engineers in Serbia. This school took only for three years but it gave very important influence on forming a separate technical department at the "Lyceum" in 1853. One of key-points of education in Serbia occurred in 1863, when so called "The Advanced School" was established so that it included three faculties. When new Belgrade University was established in 1905, the technical faculty with three departments such as civil, architecture and mechanical engineering was retained and lasted until 1925. In 1925, the fourth department — chemical engineering — was set up at the technical faculty.

After World War II in 1948, the Government of the Peoples Republic of Serbia passed a regulation on separating the Technical Faculty from the university and changing it into the independent Higher Technical School in Belgrade (Technical University). In 1954, the important decision was made for closing the Higher Technical School. The prevailing climate was to have own teachers for all subjects taught at individual faculties, and it was even legally supported, and all that led to the sudden increase of the number of teachers who taught both major and alternative subjects. This practice ranged from general education programs to narrowly expert disciplines.

The outcome of this forty-five year lasting 'original approach' is following situation:

- reticence of faculties that act as 'independent universities',
- a number of teachers with disastrously law pays,
- parallel departments of the same scientific and teaching disciplines in different faculties, and
- unreasonably educational system with substantial loss of university professors' authority.

There is also a similar situation in other universities in Serbia: Nis, Novi Sad, Kragujevac, Novi Pazar, Pristina and Kosovska Mitrovica, with

personnel problems even more distinct.

3. Modern Education in Serbian University before Bologna Process

3.1 Universities and Colleges in Serbia

There are 7 national and 7 private universities in the Republic of Serbia, and 84 national and 51 private faculties. There are also 49 national and 31 private colleges (either upgraded to the level of higher school of professional studies or closed down, depending on the outcome of the accreditation process). The Law places private faculties and the faculties founded by the Republic of Serbia on equal footing regarding their rights but also the obligations.

In the academic year 2006/2007, 98,259 students have been enrolled in all the higher education institutions in Serbia. The total number of students enrolled in the basic (undergraduate) academic studies at the universities and faculties (state and private) was 57,359 (58%). The total number of students enrolled for the graduate academic (master) studies at the universities and faculties (state and private) was 10,860 (11%). The total number of students enrolled in the colleges (state and private) was 30,040 (31%). Most of the higher schools filed their applications for accreditation as academies of professional studies, and higher schools of professional studies. The academies of professional studies and higher schools of professional studies were non-existent in the previous system of higher education.

3.2 Organization of University Education

Study programs to educate students at Serbian Universities took five years, i.e. ten semesters. Regular lecture studies went on for nine semesters while the tenth semester was intended for working out the diploma thesis. On the basis of the diploma thesis and its public presentation, an academic degree of graduated student — bachelor of science (B.Sc.) was acquired. Upon completing graduate studies it was possible to continue education with advanced training at the postgraduate studies lasting for two years. After all exams were being successfully passed, the completion

of the Master of Science degree theses and its public presentation, the academic degree of master of science (M.Sc.) was acquired. The highest degree acquired at the university was the Doctor of science (Ph.D.). This degree was acquired on the basis of working out a doctoral dissertation and its public presentation. The work on doctoral dissertation lasted for five years.

Besides the university education, there were a certain number of higher vocational schools in Serbia where practical knowledge in various areas was gained. These schools took two years to complete and they were no guarantee for the direct access to a university. A very small number of students who graduate from higher vocational schools continued their studies at the university.

3.3 State of Serbian Universities

The most of the constraints that each university faces now were common in all universities across the country[2]. There are a large number of boundary conditions which the universities themselves could not overcome immediately such as the economic situation, damage to societal values and norms for decades, the general educational profile at school level, the legal framework, and levels and methodologies of resource allocation. In addition to the conditions, there were also a number of regional differences within the Republic of Serbia which affected the universities in various ways. We can find the most obvious occasion in the case of the University of Novi Sad, with the strengthened role of the regional government of Vojvodina. Other examples, however, were included in the universities in Belgrade, which also face some specific issues by virtue of being in the middle of the capital city and the additional problems that this can bring. The University of Kragujevac faced an exceptional situation given the concentration of refugees in that region, started from 1990, and the collapse of the industrial complexes around which the university was previously structured.

The funding received from the Government was based mainly on input factors and student numbers, and not linked to quality measures, output factors or good performance in priority areas. Thus the funding model did

not support the strategic needs of either the universities themselves or of Serbian society in general. Moreover, this funding was sent directly to the internal units of the university in a highly prescribed way, and not to the university itself. This funding model was based on existing and historical parameters, rather than future strategic options. This combination of all these leaved no possibility for the university to plan and implement change in a realistic way, either at central or decentralized level. Where external funds were earned by individuals or units within the university, there were no policies or mechanisms on the need for each university to levy an overhead on such external income. One source of such external funds was student fees. There appeared to be no mechanism to ensure the transparent and accountable use of these student fees, which should not be used only to increase salaries but also to ensure higher quality of teaching and better learning standards and conditions within the university. It was clear that official salaries in the universities were too low, but that the university had no control over these real salary levels or over the internal discrepancies.

There was a heavily inverted age pyramid of academic staff at all the universities, which was already a constraint but which could become a serious problem in the near future.

Universities in general had poor internal communication tools and practices, which mean that it was difficult to spread formal information rapidly and effectively. In some cases, there were large parts of the universities relatively unaware of the efforts of the university leadership in a number of fields, despite the best efforts of these leaders to rebuild a university community following the divisive policies of the previous years.

Very large percentages of students took far too long to complete their university studies, even considering the exceptional social situation of the recent years. This fact, coupled with the unacceptably high drop-out rates in many faculties throughout the universities, showed that the universities were not efficient in fulfilling their most essential purpose.

The unfortunate general picture resulting from the academic isolation of the 1990s was one of outdated and highly repetitive curricula, taught using outdated and internationally non-relevant literature and materials. Apart

from the lack of availability of modern documentation to students in most disciplines, the fragmented structures of the library systems means that large amounts of administrative resources (mainly personnel) were wasted, without any benefit to the users of these libraries. There appeared to be no university-wide integrated electronic catalogues anywhere, let alone a system for the exchange and sharing of documentation between all universities across the country.

4. Bologna Process

The basic principles of the university education reform at the European level[3] are established by the Bologna Declaration in 1999. Mobility, transparency, compatibility and comparability of diplomas represent the base for further work and forming the common European educational system.

In the following period until 2010, a consistent concept of higher education is to be established on the European continent based on so called 'ECTS' system (European Credit Transfer System) and absolute mobility of students, teachers, researchers and administrative personnel within the frameworks of European universities. This will enable all graduate students a free access to European labor market with automatic recognition of their diplomas regardless to the country and university where it is acquired.

The stated concept anticipates so called three-cycle study system (Fig.1):—undergraduate (B.Sc.: 3-4 yrs 180-240 ECTS);— graduate (M.Sc.: 1-2 yrs 60-120 ECTS); — post-graduate (Ph.D.: 3yrs 180 ECTS)), with the simultaneous insurance of demanded quality of studies and accreditations to higher educational institutions at the European level.

The basic idea is that students, after completing an entire university teaching cycle, receive adequate diplomas (approximately 21-23 years old - B.Sc.; 23-24 years old - M.Sc.; 28-32 years old - Ph.D.) and that they are em-powered to perform certain jobs for which interest and need on the labor market exist.

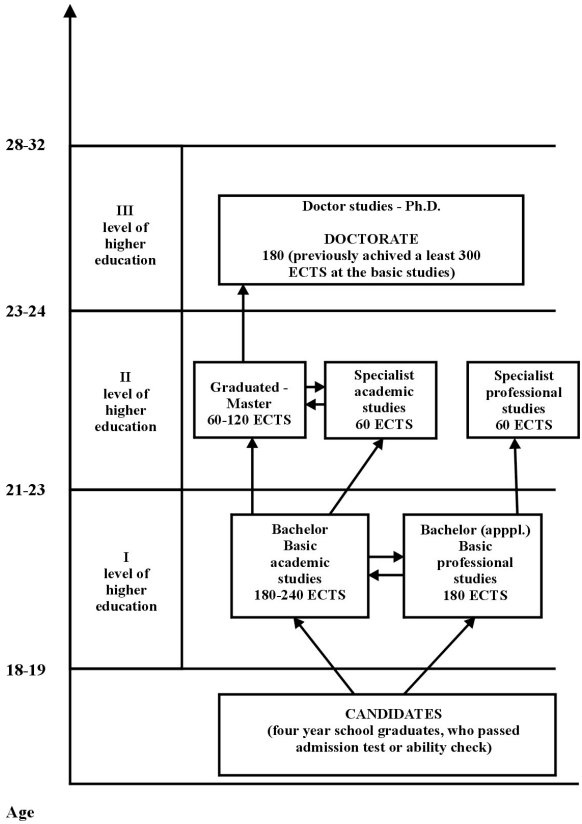

Figure 1　Three-cycle study system

5. Adaptation of Bologna Process to Serbia

The system-wide exercise has taken on additional significance following the formal request in early 2002 by the Serbian Minister for Education and Sport for the Serbian Higher Education system to join the Bologna process[4]. Quality assurance has become a key issue in this process. On May 2002, Law on Higher Education (LHE) was improved clearly so as to include a number of significant and positive developments. The new LHE came into effect on 10th of September 2005.　According to the LHE, some organizations are established and the new roles are given them.　The

organizations and their roles are explained in the section 5.1 and 5.2, respectively. In section 5.3, the case in University of Belgrade is described.

5.1 Organizations

Within two months after entering into force of the LHE, the Conference of Universities of Serbia and the Conference of Headmasters of Colleges were established. These conferences proposed the members of the National Council for Higher Education, which were approved by the Parliament of the Republic of Serbia. The National Council, in turn, under the proposal by the Conference of Universities of Serbia, elected members of the Accreditation and Quality Assurance Commission. The Council and the Commission are independent bodies (Fig.2).

The Standards were approved on 20th of October 2006, while in early December 2006 the Council and the Commission determined detailed procedure for accreditation and code of conduct of all the participants in the process, allowing for quality and unbiased selection of higher education institutions and curricula and opening competitive venues to the professionals educated and employed in the higher education system in Serbia across the European higher education area.

In compliance with the LHE and the adopted Standards, the accreditation of colleges, bound by the Law to enter first the accreditation process, started on 15th of December 2006.

One of the crucial points in the procedure is establishing of the professional teams of reviewers: they were elected by the Accreditation Commission, further to the announced public invitation, from among the ranks of the internationally recognized domestic and foreign university teachers, scholars, artists and experts from scientific or artistic fields, as specified in the LHE.

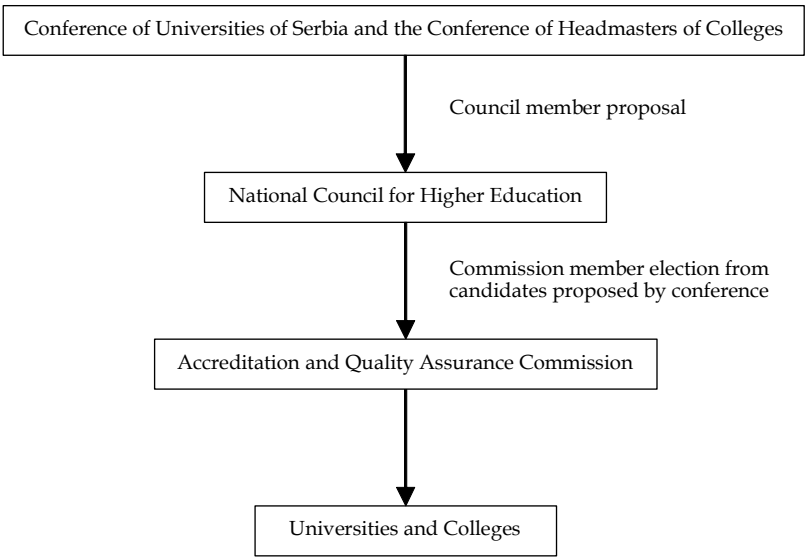

Figure 2　Organizations an Roles (Brief)

5.2　Roles

The Law on Higher Education (LHE), which is improved on May 2002, stipulates that the activity of higher education shall be carried out by the following higher education institutions:

- University,
- Faculty or academy of arts within university (offers academic studies, i.e. basic 'undergraduate', graduate and post-graduate studies, and may offer professional studies too),
- Academy of professional studies (basic and specialized professional studies),
- Higher school (basic and graduate academic studies), and
- Higher school of professional studies (basic and specialized professional studies).

Besides, the roles of some organizations are specified in the LHE.

(1) Minister of Education and Sport

The Minister of Education and Sport has enacted, within the due legal term, the following by laws:

- Rules and regulations on the substance and method of records kept with the institutions of higher education;
- Rules and regulations on public documents kept with the higher education institutions;
- Rules and regulations on the register of higher education institutions, the curricula, teachers, fellows and other employees; and
- Rules and regulations on the format of operating licenses.

(2) National Council for Higher Education

According to the LHA the National Council shall:

1) Monitor the development of higher education and its compliance with the European and international standards;
2) Propose to the ministry responsible for higher education affairs (hereinafter: the Ministry) the policy of higher education;
3) Provide opinion about the policy of enrolment to the higher education institutions;
4) Provide opinion about the procedure of enactment of regulations on the matters of importance for the higher education;
5) Propose to the Government the general rules and standards of operation of the higher education institutions, as well as the funds for their achievement, based on the opinion obtained from the Conference of Universities and the Conference of Academies of Professional Studies;
6) Determine the scientific, artistic and professional fields in the scope of education, at the proposals by the Conference of Universities and the Conference of Academies of Professional Studies;
7) Determine the standards for self-evaluation and rating of quality of higher education institutions;
8) Determine the standards and procedures for external quality Assurance of higher education institutions;
9) Determine the standards for issuance of operating licenses;

10) Determine the standards and procedure for accreditation of the higher education institutions;
11) Determine the standards and procedures for accreditation of the curricula;
12) Decide in the second instance on the appeals challenging the accreditation procedure;
13) Provide recommendations about further details for election to the occupation of a teacher; and
14) Determine a list of professional, academic and scientific titles, with indication of the occupation within the corresponding levels of study in the relevant fields, as well as the abbreviations of the professional, academic and scientific titles.

Besides, the National Council reports to the Parliament, at least once a year.

(3) Accreditation and Quality Assurance Commission

The LHE stipulates that the Commission shall:

1) Propose to the National Council the standards for issuance of the operating licenses;
2) Propose to the National Council the standards and procedures for accreditation of the higher education institutions;
3) Propose to the National Council the standards and procedures for accreditation of the curricula;
4) Propose to the National Council the standards for self-evaluation and quality rating of higher education institutions;
5) Propose to the National Council the standards and procedures for external quality Assurance of higher education institutions;
6) Help and collaborate with the higher education institutions and units within their structures in assuring and enhancing their quality;
7) Implement the procedure of accreditation of the institutions and curricula in the field of higher education, decide on accreditation requests and issue accreditation certificates in the format to be defined;

8) Look after the harmonization of the standards and procedures in the field of accreditation, within the European higher education area;
9) Provide opinion in the procedure of issuance of operating licenses; and
10) Handle other matters in line with the Act establishing the Commission.

5.3 Bologna Process at Faculty of Mechanical Engineering of Belgrade University

In the academic year 2006/2007, all the programmes of all cycles of studies started the use of ECTS as the sole system of credits. A large number of the faculties organize their basic academic studies over three years, whereby young people are educated for immediate integration in the work process. The example of Faculty of Mechanical Engineering at Belgrade University is shown for B.Sc. (Fig. 3), M.Sc. (Fig. 4) and Ph.D. (Fig. 5) studies[5].

Each year of studies has 10 courses with 5 hours each. Accordingly, a general average grade calculation is such that the sum of the 10 various grades is divided by 10. If a student does not pass a certain exam, the grade for that exam (course) is entered as 5 (five) into calculation of the average grade. The grades for each course vary from 5 (failed) to 10 being the maximum.

All the elective courses on a certain list for one of the positions are in competition and the student can choose only one course from the list. The course has the nominated lecturer (if it is rung only for one group, which is the default situation) or the list of other possible lecturers if it is organized for several groups. During the process of choosing, the priority is given to the students with higher average grades.

"Skill praxis B" can be offered by departments or by the Faculty. Chairs and departments organize and perform the skill praxis in a way they find the most appropriate for the student, as well as technically possible. For example: a tour around one or several laboratories, work in the laboratory, tour and work in certain industrial units (production and design centres) or

factories (the most desirable way of performing skill praxis), visits (excursions) to certain objects, etc.

Final report (B.Sc. work) is to be taken from the list of courses, obligatory or elective, passed by the students during the course of studies. The course has to be in the field of mechanical engineering. The final exam is obligatory done by through the printed report defence of student.

Right to enrollment in M.Sc. studies have all the students who completed B.Sc. studies at any faculty in technical science. Students who completed professional studies for bachelor level do not have the right to switch to academic studies, but rather must enroll to B.Sc. studies from the very start.

M.Sc. thesis is to be taken with supervisor from the pool of professors of obligatory courses of the elective module or elective courses the student has passed, where the many of such courses is defined by departments leading the module. Thesis defense can't be done unless all the exams are passed.

All elective courses at the Ph.D. studies are to be chosen upon obligatory approval of the mentor (supervisor, major professor). Among the maximum of 3 courses the student may choose courses not from the Faculty of Mechanical Engineering, but also from the lists offered by some other technical faculties of the university.

<table>
<tr><td rowspan="2">Hours weekly</td><td colspan="2">1st year</td><td colspan="2">2nd year</td><td colspan="2">3rd year</td></tr>
<tr><td>1st</td><td>2nd</td><td>3rd</td><td>4th</td><td>5th</td><td>6th</td></tr>
<tr><td>1</td><td rowspan="5">Mathematics 1</td><td rowspan="5">Mathematics 2</td><td rowspan="5">Mathematics 3</td><td rowspan="5">Thermodynamics B</td><td rowspan="5">Fluid mechanics B</td><td rowspan="5">Electrical and electronics engineering</td></tr>
<tr><td>2</td></tr>
<tr><td>3</td></tr>
<tr><td>4</td></tr>
<tr><td>5</td></tr>
<tr><td>6</td><td rowspan="5">Mechanics 1</td><td rowspan="5">Basics of strength of constructions</td><td rowspan="5">Mechanics 2</td><td rowspan="5">Mechanics 3</td><td rowspan="5">Numerical methods</td><td rowspan="5">Control engineering</td></tr>
<tr><td>7</td></tr>
<tr><td>8</td></tr>
<tr><td>9</td></tr>
<tr><td>10</td></tr>
<tr><td>11</td><td rowspan="2">Constructive geomet. & graph.</td><td rowspan="5">Engineering graphics</td><td rowspan="5">Machine elements 1</td><td rowspan="5">Machine elements 2</td><td rowspan="5">Manufacturing technology</td><td rowspan="5">Elective course 6.3.5</td></tr>
<tr><td>12</td></tr>
<tr><td>13</td><td rowspan="3">Strength of materials</td></tr>
<tr><td>14</td></tr>
<tr><td>15</td></tr>
<tr><td>16</td><td rowspan="5">Physics and measurements</td><td>Engineering materials 1</td><td rowspan="5">Engineering materials 2</td><td rowspan="5">Elective course 4.4.5</td><td rowspan="5">Elective course 5.4.5</td><td rowspan="5">Elective course 6.4.5</td></tr>
<tr><td>17</td></tr>
<tr><td>18</td><td rowspan="3">Basic of sociology and economics</td></tr>
<tr><td>19</td></tr>
<tr><td>20</td></tr>
<tr><td>21</td><td rowspan="2">English 1</td><td rowspan="2">English 2</td><td rowspan="4">Elective course 3.5.5</td><td rowspan="4">Mechanical engineering praxis</td><td rowspan="4">Elective course 5.5.5</td><td rowspan="4">Final course with a report (B. Sc. work) 6.5.5</td></tr>
<tr><td>22</td></tr>
<tr><td>23</td><td rowspan="3">Programming</td><td rowspan="3">Computational tools</td></tr>
<tr><td>24</td></tr>
<tr><td>25</td><td></td><td></td><td></td><td>Elective Skill praxis B 4.8</td><td></td><td></td></tr>
</table>

Figure 3 B.Sc. (Undergraduate) Academic Studies
at Mechanical Faculty of Engineering, Belgrade University

<table>
<tr><td rowspan="2">Hours weekly</td><td colspan="2">1st year</td><td colspan="2">2nd year</td></tr>
<tr><td>1st</td><td>2nd</td><td>3rd</td><td>4th</td></tr>
<tr><td>1</td><td rowspan="5">Course of elective module
1.1.5</td><td rowspan="5">Course of elective module
2.1.5</td><td rowspan="5">Course of elective module
3.1.5</td><td rowspan="25">Master
(M. Sc.) thesis
(Diploma work)
4.9</td></tr>
<tr><td>2</td></tr>
<tr><td>3</td></tr>
<tr><td>4</td></tr>
<tr><td>5</td></tr>
<tr><td>6</td><td rowspan="5">Course of elective module
1.2.5</td><td rowspan="5">Course of elective module
2.2.5</td><td rowspan="5">Course of elective module
3.2.5</td></tr>
<tr><td>7</td></tr>
<tr><td>8</td></tr>
<tr><td>9</td></tr>
<tr><td>10</td></tr>
<tr><td>11</td><td rowspan="5">Mechanics M or Fluid mechanics M
1.3.5</td><td rowspan="5">Course of elective module
2.3.5</td><td rowspan="5">Course of elective module
3.3.5</td></tr>
<tr><td>12</td></tr>
<tr><td>13</td></tr>
<tr><td>14</td></tr>
<tr><td>15</td></tr>
<tr><td>16</td><td rowspan="5">Thermodynamics M or Mechatronics
1.4.5</td><td rowspan="5">Elective course
2.4.5</td><td rowspan="5">Elective course
3.4.5</td></tr>
<tr><td>17</td></tr>
<tr><td>18</td></tr>
<tr><td>19</td></tr>
<tr><td>20</td></tr>
<tr><td>21</td><td rowspan="5">Elective course
1.5.5</td><td rowspan="5">Elective course
2.5.5</td><td rowspan="5">Elective course
3.5.5</td></tr>
<tr><td>22</td></tr>
<tr><td>23</td></tr>
<tr><td>24</td></tr>
<tr><td>25</td></tr>
<tr><td></td><td></td><td>Skill praxis M or elective module
2.8</td><td></td><td></td></tr>
</table>

Figure 4 M.Sc. (graduate) Academic Studies
at Mechanical Faculty of Engineering, Belgrade University

<table>
<tr><td rowspan="2">ECTS</td><td colspan="2">1st year</td><td colspan="2">2nd year</td><td colspan="2">3rd year</td></tr>
<tr><td>1st</td><td>2nd</td><td>3rd</td><td>4th</td><td>5th</td><td>6th</td></tr>
<tr><td>5</td><td>Advanced course of mathmatics 1.1</td><td>Advanced course of mathematics or fluid mechanics 2.1</td><td>Elective course 3.1</td><td>Ph.D. thesis proposal preparation</td><td rowspan="2">Ph.D. thesis writing</td><td rowspan="2">Preparation work on Ph.D. thesis public defence</td></tr>
<tr><td>5</td><td>Numerical methods 1.2</td><td>Elective course 2.2</td><td>Elective course 3.2</td><td rowspan="4">Laboratory, research, publication (work on thesis)</td></tr>
<tr><td>5</td><td>OMSR and communication 1.3</td><td>Elective course 2.3</td><td rowspan="3">Laboratory, research, publication (work on thesis)</td><td rowspan="3">Laboratory, research, publication (work on thesis)</td><td rowspan="3">Laboratory, research, publication (work on thesis)</td></tr>
<tr><td>5</td><td>Elective course 1.4</td><td rowspan="2">Laboratory, research, publication (work on thesis)</td></tr>
<tr><td>10</td><td>Laboratory, research, publication (work on thesis)</td></tr>
<tr><td></td><td colspan="6">Obligatory teaching work as help in exercises on lower levels of studies</td></tr>
</table>

Figure 5 Ph.D. (doctoral) studies
at Mechanical Faculty of Engineering, Belgrade University

6. Conclusion

The Bologna Process offers an excellent opportunity for higher education in Serbia to integrate a fully European and international dimension into its own reform process. Awareness of the main objectives of the Bologna process appears to be quite high within the universities, and the

student bodies and Ministry for Education and Sport are also very active in this respect.

There are the significant and growing numbers of new or renewed international contacts which the universities now enjoy. However, a few of the universities seem to approach these international opportunities in a strategic manner, and the success or otherwise of most of these opportunities appear to be left almost entirely in the hands of the individual academics most concerned. This is the level at which real cooperation should indeed take place, but the university as a whole should be aware of the important possible synergies that can be created between these individual initiatives. At the same time, greater and more systematic use of visiting professors should be made to bring new knowledge and techniques to the universities, in line with each of their priorities. While it is clear that the universities in Serbia have many links with their stakeholders and with society in general, but more strategic links could be established with many of these external partners, and that the benefits of these would be mutual.

Quality assurance at universities should stimulate the links between the university, its students and current and potential employers. As a major provider of knowledge and innovation, the university has an important role to play in this field.

A concrete step which each university could take would be to establish a university-level Research and Development office to assist the faculties and departments in the search for research funding and partners, participation in international research projects and the necessary administrative procedures that these involve, as well as the potential commercialization of research outcomes and results.

The future of higher education in Europe will be heavily influenced by the Bologna process, with its emphasis on cross-border mobility of staff and students, and the European employability of graduates. These "Bologna" elements emphasize the international dimension but in fact entail significant changes for domestic students and national study programs, so that internationalization and local issues can no longer be separated.

Notes

1) University of Belgrade, The Republic of Serbia, 2008.
(http://www.bg.ac.yu)
2) EUA, Institutional Evaluations of Universities in Serbia 2001.-2002., EUA Overview Report, Geneva, 2002.
3) Bologna Declaration, Joint Declaration, Bologna.
(http://www.ond.vlaanderen.be/hogeronderwijs/bologna/)
4) Ministry of Education, The Republic of Serbia, 2008.
(http://www.mps.sr.gov.yu)
5) Academic Studies Guide - B.Sc., M.Sc., Ph.D., Faculty of Mechanical Engineering, Belgrade, 2008.

セルビアの大学はボローニャ・プロセスにどのように適応しようとしたか

ゴラン・スラブコビッチ*
北　　栄　輔**

＜要　旨＞

セルビアの大学の歴史は、1808 年にベオグラードに“大学校 (The Big School)”ができたときに始まる。しかし、セルビア政府はボローニャ・プロセスに併せて大学のシステムを改革し、そのために議会は高等教育に関する法律(LHE)を改定した。ボローニャ・プロセスは、ヨーロッパ高等教育分野を創造するプロセスであり、46 カ国の省庁、高等教育機関、学生、教職員に加えて、国際機関も参加している。

本論では、セルビアの大学の歴史的な話から始める。ボローニャ・プロセスについて簡単に説明した後、ボローニャ・プロセスに併せて改革された新しいセルビアの教育システムについて述べる。ボローニャ・プロセスにあわせるために、新たにいくつかの組織が設立された。それは、セルビア大学会議、単科大学校長会議、高等教育国民会議、認証・品質保証委員会である。これらの組織の役割と関係について説明する。最後に、ベオグラード大学の機械工学科のカリキュラムを事例として紹介する。

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